ESH-500-PEC User Manual

schlumpf

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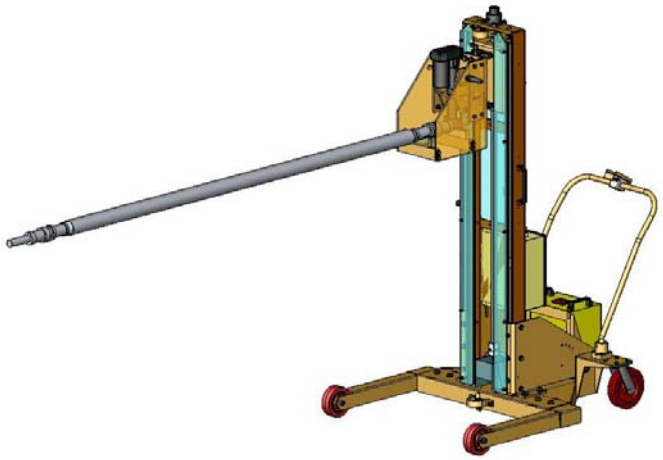

ERH-500-PEC User Manual

- General guidelines for use
  - Statement of purpose
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- Installation
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  - Step-by-step operating procedure
  - Troubleshooting
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  - Service information
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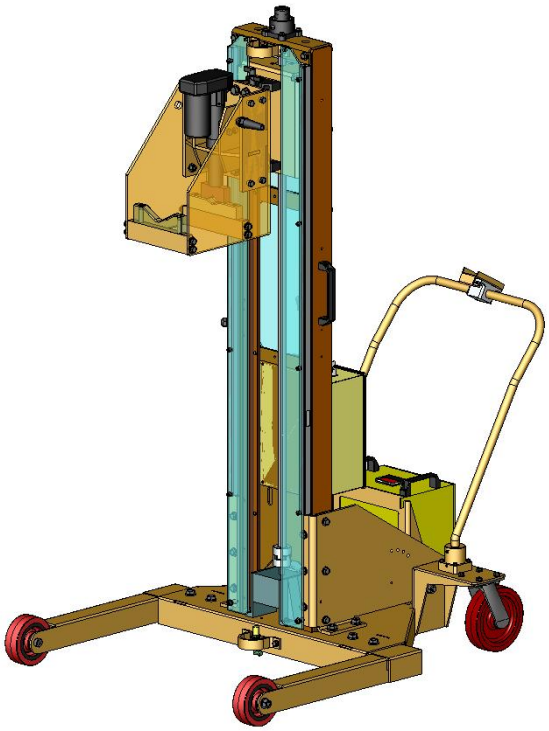
- Manufacturer's declaration
- Charger operation
- Battery MSDS sheets
- Assembly drawings, spare parts lists & wiring diagrams



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General Guidelines On The Use Of Schlumpf Material Handling Equipment

General:

Thank you for choosing to use Schlumpf material handling equipment for your handling applications and needs. All Schlumpf machinery is proudly designed, manufactured, assembled, and tested in the U.S.A.

This information is intended for use and review by maintenance and operating personnel before the equipment is operated or maintenance is performed. Schlumpf material handling equipment is high-value machinery and should be used and maintained with care. Please read these instructions carefully!

Safety:

All equipment must be operated by trained personnel. Never touch any rotating machinery or machine parts until movement has completely stopped. Damage or injury may result!

Lifting Capacity / Permissible Use under Load:

Maximum load allowances have been calculated for this equipment based upon operating data supplied to Schlumpf at the time of order. Maximum load values refer to the maximum weight of the material to be handled. Never exceed the maximum allowable load value for this equipment. Consult Schlumpf before using this equipment in any other application for which it was not originally intended. Damage or injury may result!

Schlumpf material handling machines are intended to lift, lower, insert, extract, and position rolls or other forms of material. The machine is not intended to lift material over the specified design weights supplied to Schlumpf at the time of order. Damage to the machine or operator injury may result!

Plant / Workplace Conditions and Operation:

Machinery with which this Schlumpf equipment will be used should be in good repair and properly aligned (spindle to spindle axis, web path axis, etc.). Misalignment will cause adverse affects that may hamper desired operation and will increase the rate of wear of Schlumpf and other equipment.

Maintenance and Warranty:

To assure safe and proper operation of this and other equipment, follow preventative maintenance guidelines set forth in this manual* and any additional instructions prescribed by the manufacturer of the equipment on which your Schlumpf product will be used. **BATTERIES ARE NOT COVERED UNDER WARRANTY.**

Periodically check screws and bolts for proper tightness as fasteners can loosen due to vibration. This product should be kept clean and free of foreign matter. Replace any and all damaged parts immediately.

**** Warranty claims can not be accepted unless proof of periodic maintenance (according to the guidelines set forth in this manual) can be furnished by the user.***

Lubrication:

For lubrication of moving or gliding surfaces we recommend the use of a high quality grease such as Jet-Lube Clear-Clean Lubricant with PTFE Synthetic Bearing Grease. If alternative products are used it is important that they meet the following requirements: high adhesion of the lubricant, high and permanent lubricate under load, little or no attraction of dust, contains no dangerous or hazardous propellants, gases, or ingredients that may be harmful to the environment or operators.

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Service:

Service and maintenance should be performed only by trained personnel following the guidelines established in this installation, operation, and maintenance manual. Damage or injury may result if established procedures are not followed! Please consult Schlumpf with any questions or problems you may have with this or any other Schlumpf equipment.

Spare Parts And Tools:

Use only Schlumpf spare and replacement parts or those recommended by Schlumpf. Use of any other parts will void your product warranty! Tools, metric fasteners, metric components, or any other special related items required for the maintenance of Schlumpf equipment are available from Schlumpf.

Transport Damage:

Schlumpf equipment is thoroughly tested and carefully packaged prior to shipment. If your unit was damaged in transport, contact the shipper immediately. Make sure that you contact the transporter within 24 hours of the receipt of the machine and, preferably, do not sign a receipt for the machine without noting the damage on the bill of lading. Call Schlumpf immediately! Do not try to operate the equipment. Damaged parts which have not been reported immediately to Schlumpf will not be replaced under warranty.

Equipment and Operating Safety:

This equipment was manufactured in accordance with the acknowledged regulations of the technology involved and has been thoroughly tested under load. Before placing the unit into service, check for possible transport damage and review this manual with all potential operators of the equipment. Thoroughly test the equipment unloaded before attempting to handle any kind of load.

Follow these guidelines for operating safety:

"WARNING"

- Never step under or stand under suspended loads.
- In principle, the operator stands behind or to the side of the unit, never to the front.
- Only the operator should remain within the working radius of the equipment.
- Always work within the permissible load capacity of the Schlumpf equipment and hoist system.
- Only allow trained maintenance personnel to service and repair the equipment.
- Use only Schlumpf accessories and spare parts.
- Always unload the equipment before lowering the unit to the floor or taking the unit out of service.
- Never exceed Schlumpf capacities for maximum roll or material weight and dimensions.
- Schlumpf equipment is designed to lift material only. Never lift personnel.
- Operators and personnel should never stand or ride on the machine.
- The maximum load capacity of all Schlumpf equipment is clearly labeled on the machine itself. Never exceed the load capacity of the unit. Damage, extreme wear and operator injury may result.

Closely follow the recommendations and instructions of the manufacturer of purchased system components. Failure to do so can result in equipment damage and/or serious operator injury!

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Statement Of Purpose

Schlumpf material handling equipment has been designed to operate as mechanical lifting, turning and positioning devices for the handling of rolled materials in a (core) horizontal and / or vertical orientation.

Schlumpf hoist-based equipment is for use with cranes and overhead hoists within the operating perimeter of the material handling plant or workspace and may be used only for this purpose. The hoist or crane on which Schlumpf hoist-based material handling equipment is used should have the capability of being rendered inoperable with an Emergency stop switch.

Schlumpf portable / floor-based equipment is for use within the operating perimeter of the material handling plant or workspace with a solid concrete or comparable floor and may be used only for this purpose.

Consult Schlumpf if the unit is to be used with materials other than rolled (cored) materials, or other than what the equipment was originally specified and designed.

Schlumpf standard mandrels are designed to handle materials with a paper/cardboard core. If the core of the material to be handled has been changed or is not paper/cardboard, special modifications to the grippers must be made. This includes, but is not limited to, steel, plastic and aluminum cores.

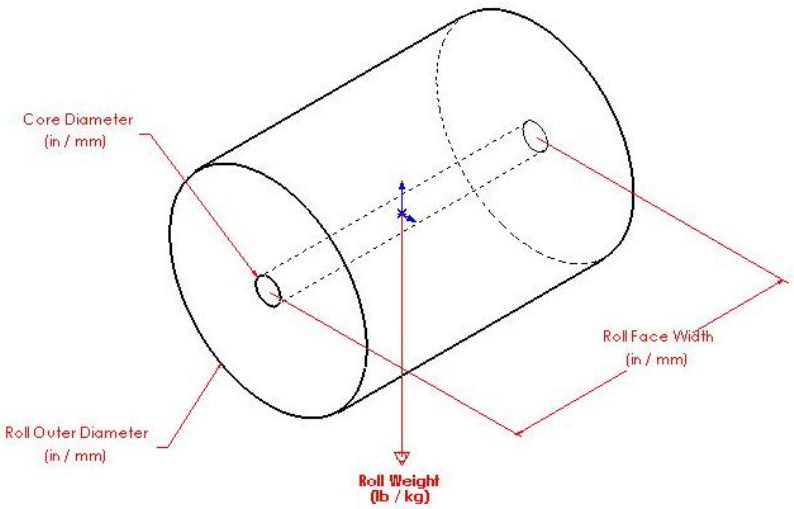
Schlumpf mechanically expanding mandrels are “fail safe”, self tightening, and can only be disengaged from the core by the operator.

CAUTION!

Schlumpf material handling equipment is for use under operating conditions supplied to Schlumpf at the time of order. As such, it may not be possible to safely use the machine for any conditions beyond the stated capacities and specifications. Please consult Schlumpf when a change in operating parameters may affect the unit’s safe and proper use.

Schlumpf equipment has been clearly labeled with warning and informational signs. For your safety, read and obey all labeling on your machine.

Load capacity, when handling and manipulating a rolled/cored bundle of material, is a function of roll weight vs. roll face width. A load capacity curve has been generated for most Schlumpf handling equipment and is located on the capacity page for the specific equipment pertaining to this manual. Do not exceed maximum capacity! Serious injury or equipment damage will result!



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Equipment Specifications And Capacities

The ERH-500-PEC shaft handling unit was designed and/or tested for the following specifications or conditions:

Max. shaft weight :	see spec sheet / capacity sticker
Max. shaft length:	see spec sheet / capacity sticker
Vertical Travel Speed:	2.8” / sec. (71mm / sec)
Machine Weight:	800lbs (364kg)
Shipping weight:	1000lbs (454.5kg)
Power Source:	(2) 12 volt DC sealed lead-acid batteries in series for 24 volt DC output.
Switching:	Normally open contactors.
Operator Interface:	Hand-held pendent with up/down, horizontal/vertical switches.
Lift mechanism:	24VDC electric motor with Acme screw jack and gear reducer box
Clamp mechanism:	(1) 24 volt DC electric linear actuator with acme screw drive.

BATTERIES ARE NOT COVERED UNDER WARRANTY. PLEASE KEEP THE BATTERY PACK CHARGED AT 21vdc OR GREATER.

DO NOT OVERCLUTCH ACTUATORS! ELECTRIC ACTUATORS ARE EQUIPPED WITH A SLIP CLUTCH FOR REACHING END-OF-STROKE. DO NOT LET ACTUATOR CLUTCH RATCHET CONTINUOUSLY. OVERCLUTCHING ELECTRIC ACTUATORS WILL CAUSE PREMATURE WEAR AND DAMAGE!

The ESH-500-PEC is clearly labeled with a load capacity sticker. Do not exceed the maximum shaft weight and length. Serious injury or equipment damage will result!

Example of capacity label on ESH-500-PEC*:

(*actual weight and length capacities will vary!)

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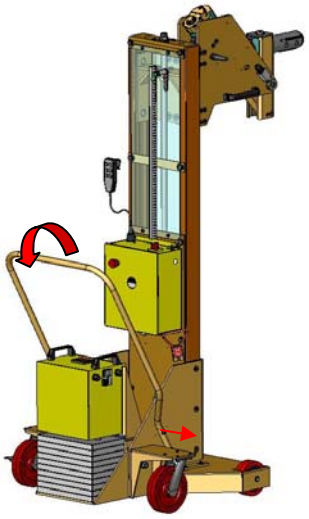
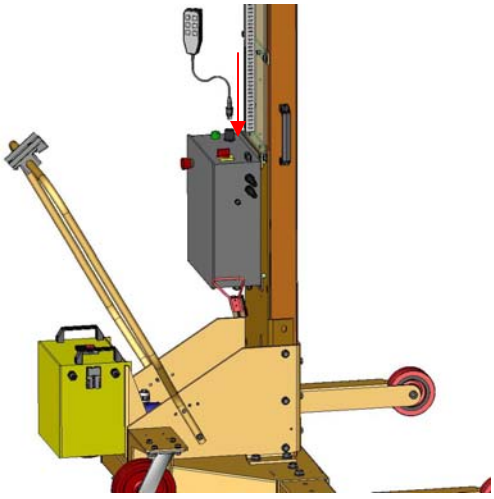
Set-up

The handle bar comes in the upright position from the factory.

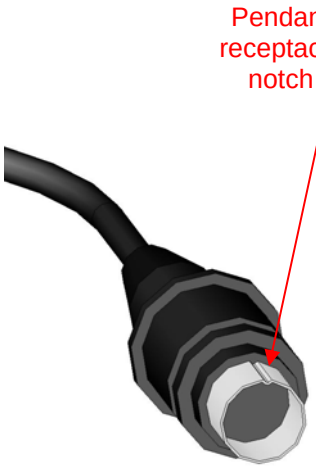
Adjust the handle bar to the desired position.

Unbolt the handle bar and move to the desired position and bolt it securely back in place.





Plug the handheld controller into the control box as shown.



NOTE! Control pendant and receptacle have locking grooves and notches! Do not force the pendant into the receptacle; damage may result!

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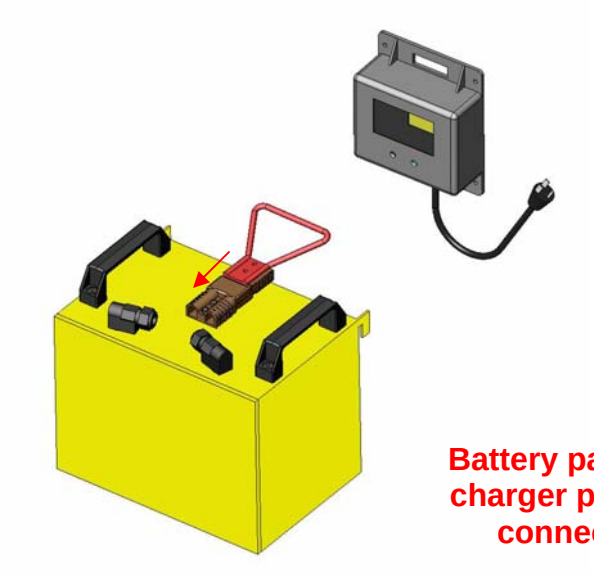
STOP!

Charge the battery pack before operating the ERH handling unit.
CHARGE BATTERY PACK AT END OF EVERY SHIFT, EVERY DAY.

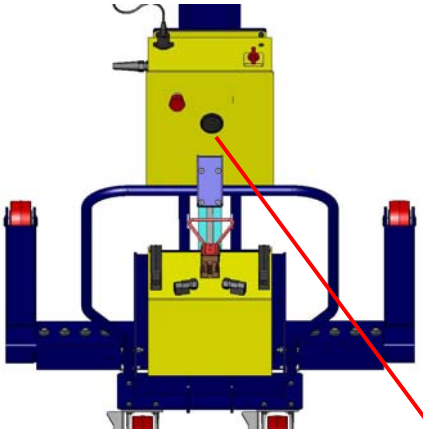


- Plug the battery charger into a properly grounded, 115V or 230VAC receptacle.
- Unplug the battery pack from the ERH controls.
- Connect the handle/connector from the charger to the battery connector on the battery pack.

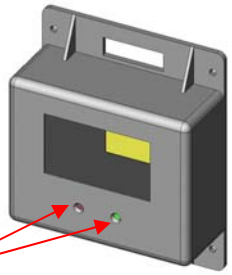
NOTE!
Schlumpf recommends establishing a designated charging station for battery packs. Mount charger kit to wall or workbench and remove battery pack from ERH unit when charging is required.

Battery pack and charger properly connected

BATTERIES ARE NOT COVERED UNDER WARRANTY. PLEASE KEEP THE BATTERY PACK CHARGED AT 21vdc OR GREATER.



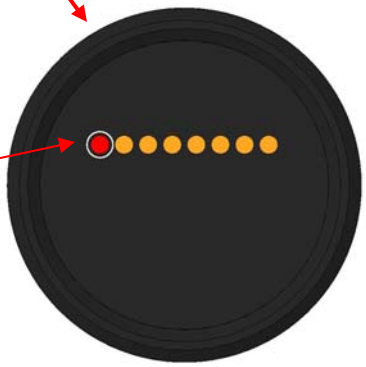
- Panel meter indicates battery voltage
- **Pendant control functions will turn off when battery voltage drops too low!**



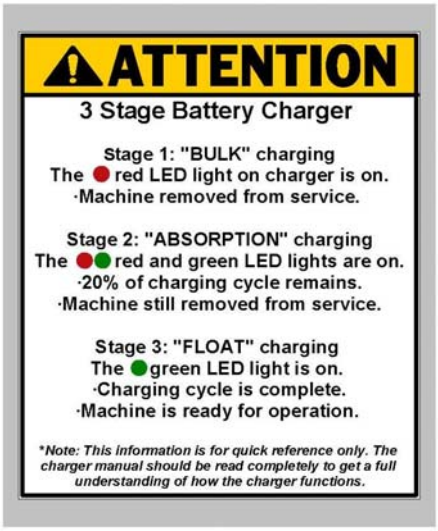
Indicator lights on charger

Lights indicate battery power (all lights = full power)

Last light (Red) is Warning for low battery voltage (VDC < 21)



LOW VOLTAGE SIGNAL WILL TURN OFF PENDANT CONTROLS!


ATTENTION
3 Stage Battery Charger
Stage 1: "BULK" charging
The red LED light on charger is on.
·Machine removed from service.
Stage 2: "ABSORPTION" charging
The red and green LED lights are on.
·20% of charging cycle remains.
·Machine still removed from service.
Stage 3: "FLOAT" charging
The green LED light is on.
·Charging cycle is complete.
·Machine is ready for operation.
*Note: This information is for quick reference only. The charger manual should be read completely to get a full understanding of how the charger functions.

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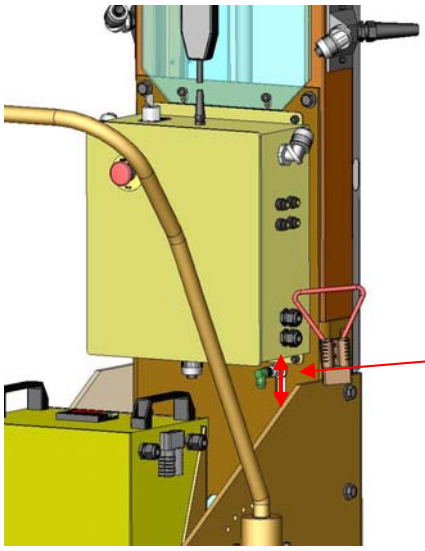
Set-up (cont'd)

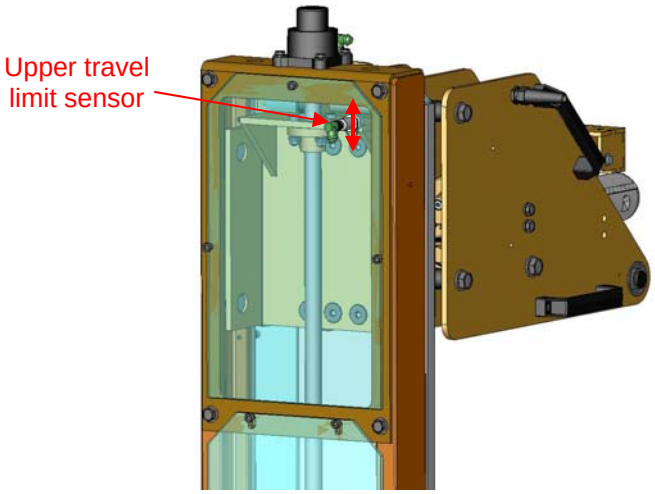
Limit switch adjustment

The upper and lower travel limit sensors are factory set, but may be adjusted if desired.

Loosen the sensor mounting nuts and slide the sensors up or down in the slot to obtain the desired position.

CAUTION! The shielded proximity sensors have a very small sensing range. (~1mm MAX). CAREFULLY TEST THE UP AND DOWN TRAVEL OF THE CARRIAGE TO MAKE SURE THE SENSORS ARE BEING ACTIVATED AND THE END-OF-TRAVEL! ALLOWING THE UNIT TO TRAVEL PAST THE SENSORS WILL CAUSE SEVERE / CATOSTROPHIC DAMAGE TO THE ERH UNIT!





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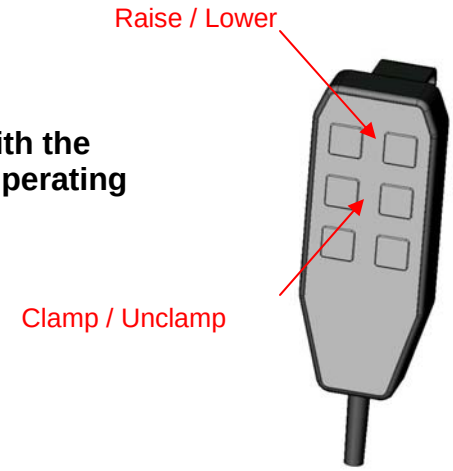
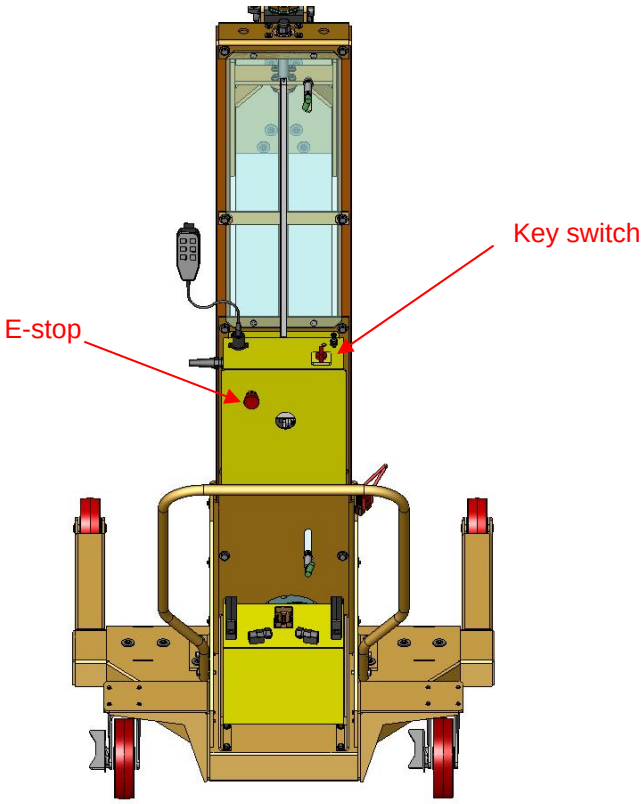
Operation

All functions of the unit will be controlled with the handheld controller shown below.



All operators should become familiar with the controller buttons and functions prior to operating the unit in service.

Turn the key switch to the “ON” position and twist to release the E-stop button if it is engaged.



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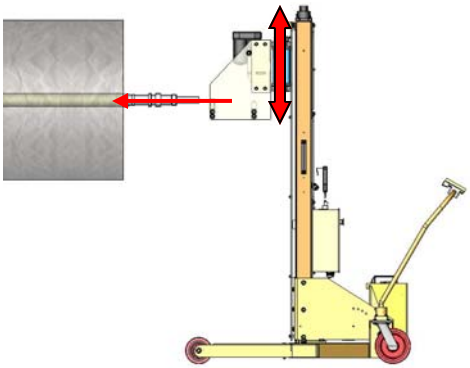
Operation (cont'd)

Extracting a shaft:

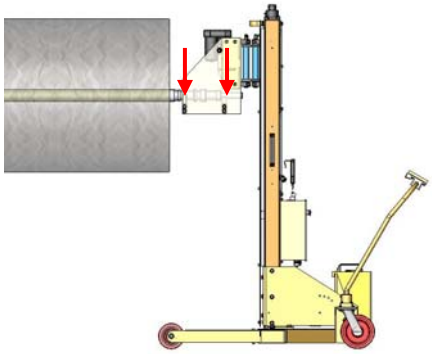
1. **Push the unit toward the shaft that is to be extracted.**



2. **Raise / lower the carriage and tooling so the shaft support anvils are just under the shaft journal end.**

Press the "up" or "down" button on the handheld controller.

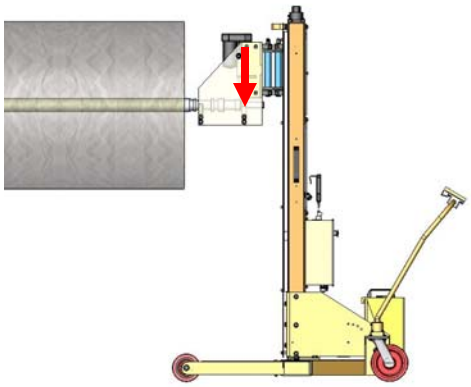
Anvils should align with journal features



3. **Push the unit forward so the shaft anvils line up with the designated journal features onto which the clamp tooling will clamp.**

(The designated journal features on which to clamp are specified during design approval.)

4. **Clamp the end of the journal shaft with the powered clamp tooling.** **The clamp actuator clutch may ratchet a couple of times when the shaft if fully clamped. Do not over-clutch the clamp actuator!**



Press the "Clamp" button on the handheld controller.

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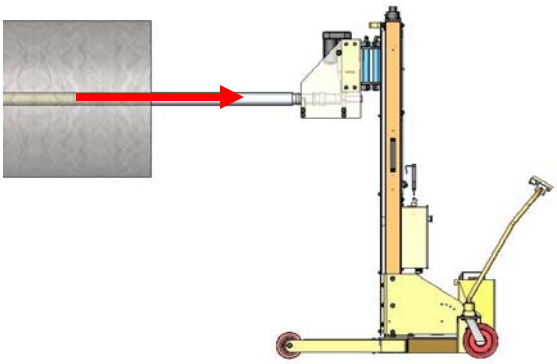
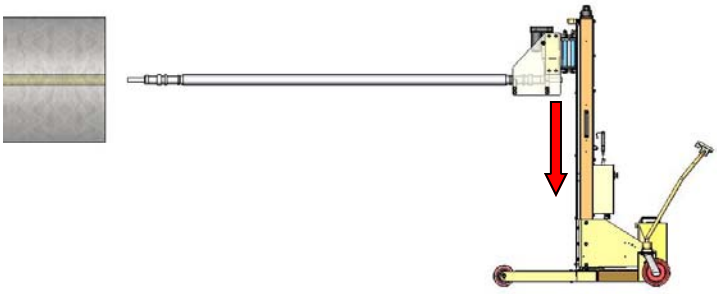
Operation (cont'd)

5. **When the shaft is fully clamped in the powered clamp tooling, extract the shaft from the core by pulling back on the unit.**



6. **When the shaft is fully extracted it may be transported to the desired location.**



CAUTION!

TRANSPORT THE SHAFT AT A SAFE CENTERLINE HEIGHT.

IF THE SHAFT IS EXTRACTED FROM A CORE THAT IS HIGH OFF THE GROUND, LOWER THE TOOL-ING BEFORE TRANSPORTING THE SHAFT!

Press the "Down" button on the handheld controller.

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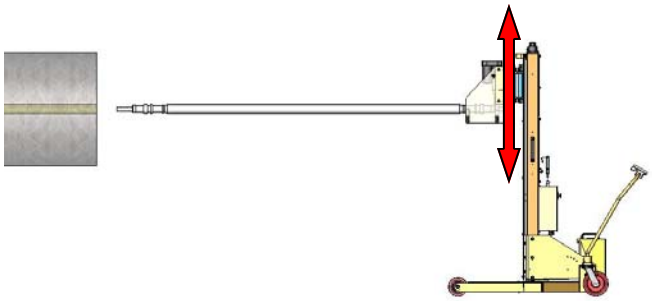
Operation (cont'd)

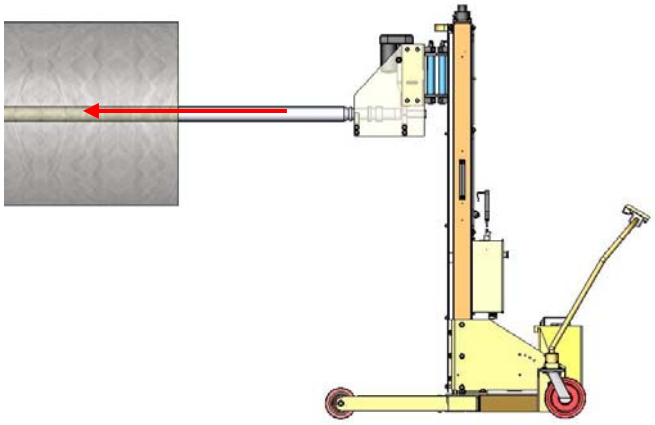
Inserting a shaft:

1. **With a shaft loaded in the clamp tooling, drive the unit toward the roll into which the shaft will be inserted.**



2. **Raise / lower the carriage and tooling so the shaft lines up with the core of the roll.**

Press the "up" or "down" button on the hand-held controller.



3. **Insert the shaft into the core of the roll by pushing the unit forward.**

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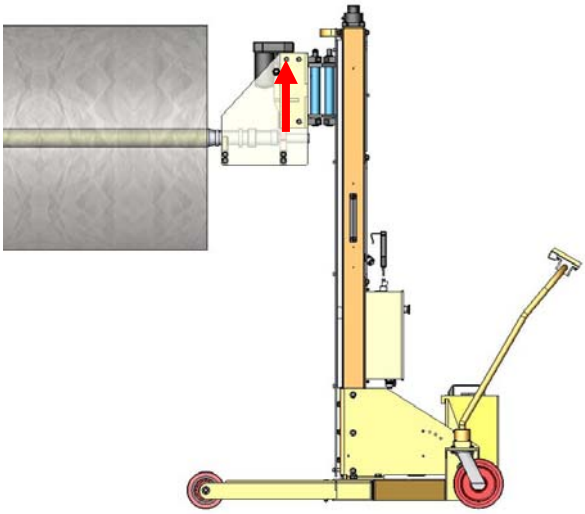
Operation (cont'd)

4. **Insert the shaft into the core as far as desired.**

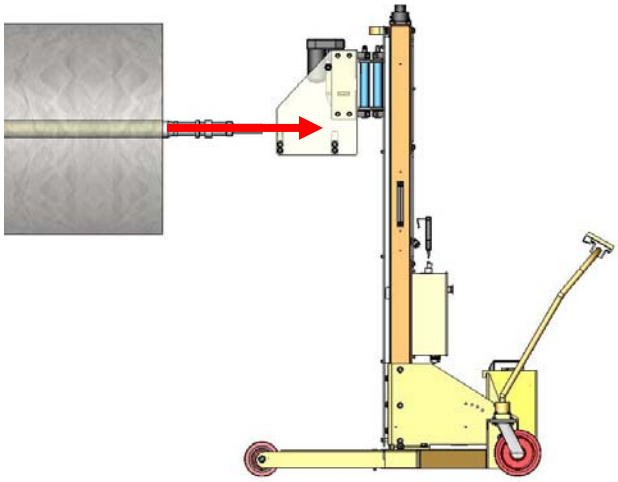
5. **Release the journal end from the clamp tooling by raising the powered clamp off the shaft journal.**

Press the "Unclamp" button on the handheld controller.



6. **Lower the carriage and tooling a small amount so the shaft support anvils are disengaged from the shaft journal.**

Press the "Down" button on the handheld controller.



7. **Pull the unit away from the roll and shaft, leaving the shaft in the core of the roll.**

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Schlumpf, Inc.

Troubleshooting

Please refer to the following list of potential problems and their solutions if the shaft handling unit is not functioning normally before calling Schlumpf. We'll ask you the same questions!

Note: Continual misuse of this product will cause extreme wear and increase the potential for operator injury. Units damaged in this manner should be removed from service immediately and returned to Schlumpf for repair.

1. The loader will not lift a load:

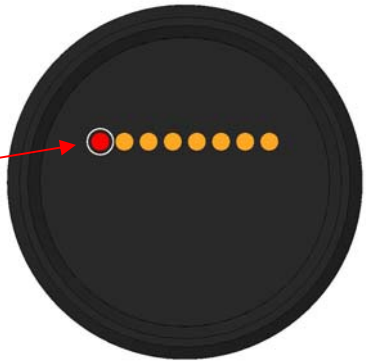
- Dilemma: the batteries are carrying insufficient voltage (see below).
- **Pendant control functions will turn off when battery voltage drops too low!**
  - Solution: remove the loader from service and charge batteries.
- Dilemma: the motor overload has tripped and cut power to the lifting motor.
  - Solution: remove the loader from service. A trained electrical technician should open the control enclosure and reset the overload.
- Dilemma: the power switch is in the "OFF" position.
  - Solution: turn the switch to the "ON" position.
- Dilemma: there is an obstruction blocking the photo-optic sensor(s)
  - Solution: remove the obstruction from the unit and wait for the time delay to complete before performing any new operations with the loader.
- Dilemma: The shaft is above the rated capacity of the unit
  - Solution: DO NOT attempt the handle a shaft that is greater than the capacity of the unit. Contact Schlumpf, Inc. if there has been a change to the application / shaft specs.

2. The powered clamp tooling will not clamp onto a journal end:

- Dilemma: the clamp and support anvils are not positioned correctly with the shaft journal.
  - Solution: Refer to the spec drawing in the back of this manual to determine the correct features on the journal end on which to clamp. Move the unit forward or backward according to the position of the journal end in the tooling.
- Dilemma: shaft support anvils are incorrectly positioned in the clamp tooling.
  - Solution: switch the positions of the plastic support anvils, as they are quick-change and may have been reversed in position. In most cases the anvil with the bigger "V" groove will be in the front of the tooling.
- Dilemma: the journal end is too small to be clamped in the powered clamp.
  - Solution: Review the application notes, shaft specs, and design approval drawings and contact Schlumpf if there is a discrepancy between the design and the shaft that is to be handled. In most cases Schlumpf will be able to manufacture new support anvils to correctly support and clamp the shaft journal end.

Last light (Red) is Warning for low battery voltage (VDC < 21)

LOW VOLTAGE SIGNAL WILL TURN OFF PENDANT CONTROLS!



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Schlumpf, Inc.

Periodic Maintenance

Generally, Schlumpf handling equipment is maintenance free. However, all mechanical equipment should be inspected periodically for safety, proper function, lubrication, and wear. This care will ensure years of trouble-free performance from Schlumpf equipment.

The check should be performed by trained maintenance personnel and a written record of the inspection should be maintained in accordance with regulations covering "load lifting devices". A tabulated page is located in this manual for keeping care and maintenance records. Schlumpf will, for a nominal fee, perform the inspection and submit a written report on all services. Contact Schlumpf for further information.

All Schlumpf ESH units should be Cared for According to this schedule*:

- **DAILY:**
  - **CHARGE BATTERY PACK AT END OF EVERY SHIFT, EVERY DAY.**
  - **Inspect the loader for worn, damaged, or missing parts & fasteners.**
  - **Inspect the normal operation:**
    - The carriage and tooling Raise and lower through the entire range.
    - The powered clamp operates smoothly through the entire range.
    - The limit sensors stop the travel of the unit
- **MONTHLY:** **(remove unit from service)**
  - **Lubricate all moving parts and linear motion components. Refer to page 16 for proper lubricants**
    - Lifting screw
    - Carriage / mast bearings
    - Casters & wheels
    - All other metal-on-metal moving components
  - **Inspect the gear reducer oil level. Change oil if level is low or oil is dirty.**
  - **Disconnect power to the control box. Open control enclosure and inspect for loose / damaged wires and components.** ***This should only be performed by a trained electrical technician.***
  - **Check all fasteners on the unit and tighten to the proper torque if loose.**
- **YEARLY:** **(remove unit from service)**
  - **Replace the oil in the gear reducer. Follow guidelines on following pages for proper gear reducer care.**
  - **REPLACE BATTERIES EVERY 1-2 YEARS.**
    - **Replacement frequency will depend on amount of use**
    - **Quality of battery life can be checked with a voltmeter attached to the battery terminals while the unit is inspected for proper function under load.**
    - ***This should only be performed by a trained electrical technician.***

*** Schedule is based on one shift per day.** The time intervals between service may need to be reduced, depending on the amount of use and the environmental conditions present in your application (i.e., a machine used in a dusty environment may need to be cleaned and lubricated more often).

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Fastener torque

Fasteners should always be installed to their proper tightening torque. The table below shows the recommended tightening torques for standard metric screws.

Size	Torque (N-m)	Torque (lb-in)
M4 x 0.7	5.8	52
M5 x 0.8	12	106
M6 x 1.0	20	179
M8 x 1.25	49	430
M10 x 1.5	97.5	863
M12 x 1.75	165	1460
M16 x 2.0	412	3650

Lubricants & Thread locking fluids

Schlumpf recommends the following compounds & fluids or their equivalent be used to provide care and maintenance for the ESH-500 loader:

- **Lifting screw & linear bearing lubricant**
  - Jet-Lube Clear-Clean Lubricant with PTFE
- **Metal-on-metal lubricant**
  - Motorex Universal 2000 spray lubricant
- **Fastener thread locking**
  - Loctite 242 (Blue) medium-duty threadlocker

CAUTION!

Damaged or worn parts should be replaced immediately! Many Schlumpf parts have specific surface treatment and especially heat treatment. Use only Schlumpf spare and replacement parts. Failure to do so may result in damage to the equipment or process! Never alter tooling or lift carriage parts without first consulting Schlumpf. Damage or injury may result. Always unplug the power cables before servicing Schlumpf machines.

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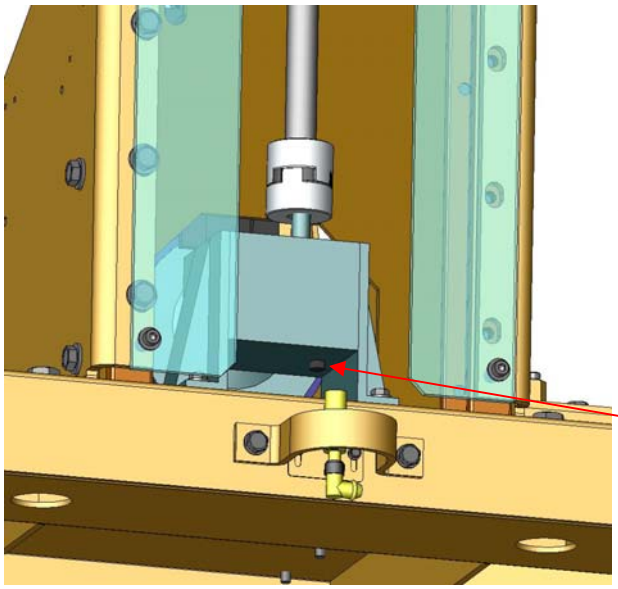
Gear reducer box maintenance



The vent plug can be taken out to check the oil level. If the oil needs to be changed, remove one of the plugs at the bottom of the reducer and drain oil. Refill the reducer with one of the oils listed below.

The reducer manufacturer recommends that the oil be changed after 500 hours of use. After the first oil change it is recommended that it be changed after every 2500 hours of use. The following is a list of oils that are recommended for use with the reducer.

Ambient Temperature	15 to 60 F	50 to 125 F
Viscosity Range cst at 40 C	414-506	612-748
ISO Grade	460	680
SAE Gear Lubricant (approx.)	#140	#250
Oil Company Name	Agma #7C	Agma #8C
Amoco Oil Co.	Amoco Worm Gear Oil	Amoco Cyl. Oil 680
Chevron Oil Co.	Cylinder Oil 460X	Cylinder Oil 680X
Exxon Oil Cp.	Cylesstic TK460	Cylesstic TK680
Fiske Brothers	SPO 277	SPO 288
Gulf Oil CO.	Senate 460	Senate 680
Gulf-Canada	Senate 460	Senate 680
Mobil Oil Corp.	Mobil 600W Super Cyl. Oil	Mobil Extra Hecla Super Cyl. Oil
Pennzoil	Cyl. Oil #8	Cyl. Oil #6
Phillips Petroleum Co.	Hector 460X	Hector 630S
Shell Oil Co.	Valvata Oil J460	Valvata Oil J680
Sohio	Energol DC-600C	Energol DC-600C
Texaco Inc.	Vanguard 460	Honor 680
Union Oil CO. of CA.	Steaval B110	Steaval B165

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Recommended spare parts

Spare parts lists, assembly specifications, and in the case of units with integral controls, wiring diagrams, are attached to the back of this manual for the ESH-500 Shaft Handling Unit. Copies of the spare parts list are available upon request.

Recommended spare parts to be kept on hand, per unit, are indicated on the spare parts list drawings in the back of the manual. They have an asterisk at the end of the part number.

Example:

P-10186* Crank handle

Service Information:

To arrange for service on any Schlumpf roll handling devices, contact Schlumpf at the following address:

Schlumpf, Inc.
15 Enterprise Drive
Windham, Maine 04062-5650 U.S.A.
Tel: 207-893-1903
Fax: 207-893-1905
E-mail: mail@schlumpf-inc.com
Internet: www.schlumpf-inc.com

Be prepared to supply the following information:

1. ESH-500 Serial No. (M-XXXXX).
2. Description of service required or nature of problem.
3. Original Purchase Order No.
4. Schlumpf Invoice or Sales Order No.
5. Date of purchase.
6. Your name, address, telephone No. , fax No. or other contact information.
7. Purchase Order for service.

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Notes & Maintenance Records:

Desription of Care / Maintenance Performed:		Date Performed:	Maintenance Performed by:

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Schlumpf, Inc.

Manufacturer's Declaration:

Manufacturer and Distributor:

Schlumpf, Inc.
15 Enterprise Drive
Windham, Maine 04062-5649 U.S.A.

Tel: 207-893-1903
Fax: 207-893-1905
E-mail: mail@schlumpf-inc.com
Internet: www.schlumpf-inc.com

Declares that this Schlumpf Type ESH-500-PEC battery-powered roll handling unit has been designed and manufactured according to known engineering and safety specification and regulations.

This unit was made in the U.S.A. with materials and components known to be of high quality. The use of the equipment is governed by local, sate and federal safety regulations.

Warranty Statement:

Seller warrants that the products sold will be free of defects in material and workmanship for a period of one year (365 days) when used on a one shift per day (not more than eight hours) basis, six months (180 days) when used on a two or three shift per day (more than eight hours) basis, from the date of delivery unless otherwise specified on the face of this document. This warranty is limited by the paragraphs below.

If buyer discovers a defect in any of the products covered by this Agreement, Buyer's exclusive remedy shall be to notify Seller immediately of such defect, and Seller,, at its option, will repair or replace the Products, or refund the purchase price. Said notice shall be in writing and shall contain pertinent information to permit Seller to identify the Product which is claimed to be defective, including without limitation, the product type and serial number and a full description of the circumstances giving rise to the claim. Failure to properly notify Seller within warranty period of such defects or Buyers undertaking or authorizing others to undertake remedial action without Seller's express approval in writing shall immediately invalidate Seller's warranty obligations.

Upon timely receipt of proper notice, Seller shall inform Buyer of the remedial action which it intends to take, and if return of the product is elected by Seller, Seller will provide Buyer with a Return Authorization Number. Buyer must comply with Seller's shipment instructions (see paragraph below) and ship the defective Product immediately.

Seller reserves the right to reject any warranty claim not properly reported and any warranty claim on any item that has been the subject of abuse, misuse, neglect, improper installation or repair, alteration, modification, accident, improper return handling, use in or with equipment not suitable for such use, unusual physical, electrical, electro-magnetic stress, failure of electric power, external causes affecting the Product, or other factors which are not covers by the warranty.

Buyer must pay freight costs to Seller for returned Products. Buyer's packaging list must show the Return Authorization Number, invoice number, date and list of all returned goods. The carton must also show the Return Authorization Number. Seller will pay return freight to the Buyer and reimburse Buyer for its reasonable return freight costs for products which are subject to warranty adjustment. There is no other charge for warranty adjustment during the warranty period, When Buyer returns any Product, Buyer shall be responsible for all damage resulting from improper packing or handling and for loss in transit notwithstanding any defect or nonconformity in the Product. If it is found that a warranty adjustment is not available for any defect claimed by Buyer, for any reason, Buyer will be notified and the product will be returned at Buyer's expense.

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Buyer hereby acknowledges that it has not entered into the agreement in reliance upon any warranty or representation by any specific person or entity except for the warranties or representations set forth herein.

Disclaimer

Seller shall not be liable for any loss, damage or penalty resulting from delay in delivery or performance when such delay is due to causes beyond the reasonable control of Seller, including, but not limited to, supplier delay, acts of God, civil or military authority, labor unrest, fire, riots, war, embargoes, unusually severe weather, shortage of power, explosion, or earthquake.

THIS WARRANTY IS THE ONLY WARRANTY BY SELLER WITH RESPECT TO THE PRODUCTS DELIVERED HEREUNDER AND MAY BE MODIFIED OR AMENDED ONLY BY A WRITTEN INSTRUMENT SIGNED BY A DULY AUTHORIZED OFFICER OF SELLER. EXCEPT AS HEREINABOVE PROVIDED, SELLER MAKES NO WARRANTIES, WHETHER EXPRESSED OR IMPLIED INCLUDING, WITHOUT LIMITATION, ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. THE WARRANTIES SET FORTH IN SECTION ABOVE EXTEND ONLY TO BUYER.

Sellers Limited Liability

SELLER'S LIABILITY FOR BREACH OF THIS AGREEMENT, INCLUDING, WITHOUT LIMITATION, DELAY IN DELIVERY OR PERFORMANCE, SHALL BE LIMITED TO REPAIR OR REPLACEMENT OF THE GOODS OR REFUND OF THE PURCHASE PRICE. IN NO EVENT SHALL SELLER BE LIABLE FOR COST OF PROCUREMENT OF SUBSTITUTE GOODS BY THE BUYER OR ANY SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, HOWEVER CAUSED, WHETHER FOR BREACH OF WARRANTY, NEGLIGENCE OR OTHERWISE.

Product Returns

Returns of products are accepted at the sole discretion of Schlumpf, Inc. Products returned must be accompanied by a complete written description of the reason for the return and will not be accepted without prior notification and issuance of a Return Authorization Number (RA No.) by Schlumpf, Inc. Buyer is responsible for the cost of the return freight and the return may be subject to restocking fees. Extreme care should be made for the packaging of goods returned for credit. Buyer will be held responsible for reasonable damages to the return resulting from insufficient packaging and handling during transit.

A complete statement of terms and conditions of sale are available from Schlumpf upon request.

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